

The Loess Hills

Western Iowa is graced with a unique landform which brings delight to many of its residents & visitors. Windblown soils called loess were deposited at the end of the last Ice Age, nearly 18,000 years ago. These soils consist of light weight particles, ground as fine as flour by the glaciers. Loess soils are found in many places around the world. However, China is the only place where loess soils reach depths as great as in western Iowa. Some deposits can be more than 200 to 300 feet deep.



Stream Degradation

In the early 20th Century, many streams were straightened and land uses changed as marshes were drained and developed into farmland. Although straightening the streams decreased channel length per mile, the fall per mile remained the same. The steeper stream grade increased the velocity of flow, which coupled with the highly erosive nature of loess when saturated, caused streambeds to downcut quickly. Once begun, the erosion quickly



propagated up streams. Many streams have down-cut more than 20 feet in just 50 years. This has exposed bridge pilings and utility lines and swept away thousands of acres of farmland. Where peaceful streams once flowed, "hungry canyons" have been created.

Beginnings of the HCA

It was clear to some individuals within western Iowa that a comprehensive, long-term and low maintenance approach to streambed stabilization was needed. They knew that bank stabilization, upland conservation treatments, and land use all play important roles in controlling soil erosion in streams. However, the effects of these efforts are short-term if the bed of the stream remains unstable.



*Because the streambed was **not** stabilized, this **bank** stabilization project is now high and dry after the stream down-cut 6 feet over 7 years.*

In 1992, the Hungry Canyons Alliance (HCA) was formed to research and implement solutions to the problem of stream channel erosion in western Iowa. The HCA represents county engineers, landowners, county boards of supervisors, and Soil & Water Conservation District Commissioners in this 22-county region with deep loess soils. Resources are made available to the counties and individual land-owners through an 80% cost share program. The Hungry Canyons Alliance receives support from state, federal and county funds.



From 1992 to the winter of 2002, the program has provided the technical assistance and funds needed to complete 160 grade stabilization structures in western Iowa. Another 36 structures are in progress.

Infrastructure

Stream channel erosion has been greatly accelerated by land use changes and stream channelization during the first half of the 1900's. Channel erosion has caused an estimated \$1.1 billion in damage to public and private infrastructure & farmland in the deep loess soils of western Iowa.



A survey in 2000 of western Iowa bridges revealed that 404 are endangered by stream channel erosion. HCA streambed stabilization structures can protect bridges, utility lines, culverts, valuable farmland, and avoid traffic rerouting costs. The average structure costs about \$63,300.

For every \$1 invested in a Hungry Canyons Alliance streambed stabilization structure, a minimum of \$4.40 in property value is protected. Stabilization is the key to preventing further erosion and protecting infrastructure.

